

# PNEUMATIC HANDHELD GRINDING APPARATUS

## BACKGROUND OF THE INVENTION

### 1. Field of the Invention

The present invention relates to a grinding apparatus, and more particularly to a pneumatic handheld grinding apparatus that is easily assembled.

### 2. Description of Related Art

A conventional pneumatic handheld grinding apparatus in accordance with the prior art shown in Figs. 4 and 5 comprises a housing (5) having a cavity (52) defined in the housing (5) and a skirt (51) downward extending from a periphery of the bottom of the housing (5). A switch set (54) is mounted to the housing for selectively allowing the compressed air flowing into the housing (5). A threaded portion (521) is formed on an inner periphery of the cavity (52).

A pneumatic motor (53) is received in the cavity (52) and a locking member (6) is mounted to the inner periphery of the cavity to hold the pneumatic motor (53) in place. The locking member (6) includes a threaded outer periphery (61) so that the locking member (6) can be screwed onto the threaded portion (521) of the housing (5). The locking member (6) includes a series of indentations (62) provided to engage with a hand tool for fastening the locking member (6) to the housing (5). A dust-proof cover (55) is longitudinally attached to the skirt (51) and a grinding disk (56) is longitudinally attached to the

motor (53) so that that the grinding disk (56) is rotated when the compressed air flows into the motor (53) and the dust-proof cover (55) provides a dust-proof effect during grinding.

However, a hand tool is unique and necessary to mount the  
5 locking member (6) to the housing (5) because the locking member (6) is mounted in the cavity (52) and the hand tool needs to longitudinally correspond to the series of indentations (62) in the locking member (6). As a result, the manufacturing cost is raised due to the inextricable processes for assembling the conventional grinding apparatus.

10 For solving the above problems, another pneumatic handheld grinding apparatus, as shown in Fig. 6, is marketed. In the embodiment, the skirt (8) is separated from the housing (7) and mounted to the bottom of the housing (7) to hold the motor (72) in place in the housing (7) by multiple blots (82). Consequently, multiple threaded holes (71) are defined in the bottom of the housing (7), and multiple through holes (82) are defined in the skirt (8) and each aligning with a corresponding one of the threaded holes (71). For defining the threaded holes (71), the thickness of the housing (7) needs to be widened. However, the housing of a general handheld grinding apparatus has no thickness for  
15 defining the threaded hole so that the mold for forming the housing needs to be altered and the strength of the structure near the threaded hole is weakened.  
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The present invention has arisen to mitigate and/or obviate the

disadvantages of the conventional pneumatic handheld grinding apparatuses.

### SUMMARY OF THE INVENTION

The main objective of the present invention is to provide an  
5 improved pneumatic handheld grinding apparatus that is easily  
assembled.

To achieve the objective, the grinding apparatus in accordance  
with the present invention comprises a housing including a cavity  
longitudinally defined therein for receiving a motor set and a threaded  
10 portion formed on an inner periphery of the cavity near a bottom of the  
housing. A joint laterally extends from the housing and is connected to  
a compressed air source. A valve is mounted in the joint for selectively  
allowing the compressed air flowing into the housing to operate the  
motor set. A lever pivotally mounted to the joint for actuating the valve.  
15 The motor set includes a motor received in the cavity and having a  
shaft longitudinally extending from the motor. A connector is  
eccentrically securely mounted to a free end of the shaft and a grinding  
disk is attached to the connector so that the grinding disk is rotated  
when the compressed air flows into the housing and operates the motor.  
20 A locking member is securely mounted to the housing to hold the  
motor set in place. The locking member includes a through hole  
centrally defined therein to allow the connector and the shaft of the  
motor set extending through the locking member when the locking

member is mounted to the housing. A first skirt upwardly extends from the locking member and has a threaded outer periphery screwed onto the threaded portion of the housing and a top portion securely abutting the motor to hold motor set in place after the locking member screwed 5 onto the housing.

Further benefits and advantages of the present invention will become apparent after a careful reading of the detailed description with appropriate reference to the accompanying drawings.

#### BRIEF DESCRIPTION OF THE DRAWINGS

10 Fig. 1 is a perspective view of a pneumatic handheld grinding apparatus in accordance with the present invention;

Fig. 2 is an exploded perspective view of the grinding apparatus in Fig. 1;

15 Fig. 3 is a cross-sectional view of the grinding apparatus in Fig. 1;

Fig. 4 is a cross-sectional view of a conventional pneumatic handheld grinding apparatus in accordance with the prior art;

Fig. 5 is an exploded perspective view of the grinding apparatus in Fig. 4; and

20 Fig. 6 is a cross-sectional view of another conventional pneumatic handheld grinding apparatus in accordance with the prior art.

#### DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawings and initially to Figs. 1-3, a pneumatic handheld grinding apparatus in accordance with the present invention comprises housing (1), a motor set (2) received in the housing (1), a locking member (3) mounted to the housing to hold the motor set (2) in place and a grinding disk (23) connected to the motor set (2) so that the grinding disk (23) is rotated when the motor is operated due to a compressed air.

The housing (1) includes a cavity (11) longitudinally defined therein for receiving the motor set (2) and a threaded portion (111) 10 formed on an inner periphery of the cavity (11) near a bottom of the housing (1). A joint (12) laterally extends from the housing (1) and is adapted to be connected to a compressed air source. A valve (13) is mounted in the joint (12) for selectively allowing the compressed air flowing into the housing (1) and operating the motor set (2). A lever 15 (14) is pivotally mounted to the joint (12) for actuating the valve (13).

The motor set (2) includes a motor (20) received in the cavity (11) in the housing (1) and having a shaft (21) longitudinally extending from the motor (20). A connector (22) is eccentrically securely mounted to a free end of the shaft (21) and the grinding disk (23) is 20 attached to the connector (22) so that the grinding disk (23) is rotated when the compressed air flows into the housing (11) and operates the motor (20).

The locking member (3) includes a through hole (35) centrally

defined therein to allow the connector (22) and the shaft (21) extending through the locking member (3) when the locking member (3) is mounted to the housing (1). The locking member (3) includes a first skirt (32) upwardly extending therefrom. The first skirt (32) includes a 5 threaded outer periphery (321) screwed onto the threaded portion (111) of the housing (1) and a top portion (31) securely abutting the motor (20) to hold motor set (2) in place after the locking member (3) screwed onto the housing (1). A second skirt (33) downward extends from the locking member (3). The second skirt (33) includes an annular 10 rib (332) laterally outwardly extending from an outer periphery of the second skirt (33) and a series of indentations (331) defined in the outer periphery of the second skirt (33) for user to easily mount the locking member (3) to the housing (1). A dust-proof cover (34) is attached to the second skirt (33) and engaged to the annular rib (332) to prevent 15 the dust-proof cover (34) from detaching from the locking member (3). The grinding disk (23) is mounted to the connector (22) and the dust-proof cover (34) partially covers the grinding disk (23) to prevent the grinding dust from being present all over.

As described above, the locking member (3) and the dust-proof 20 cover (34) are sequentially assembled. The locking member (3) is easily secured to the housing (1) because the second skirt (33) has a diameter greater than that of the first skirt (32). The operator can directly hold the second skirt (33) to rotate the locking to make the

threaded outer periphery (321) be screwed onto the threaded portion (111) of the housing (1) even without using any hand tool.

Although the invention has been explained in relation to its preferred embodiment, it is to be understood that many other possible  
5 modifications and variations can be made without departing from the spirit and scope of the invention as hereinafter claimed.